SOME RECENT LITERATURE REGARDING CANCER.

A CRITICAL REVIEW.

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THE April number of the *Practitioner* is devoted wholly to treatises on the subject of cancer. The statistics collected in the office of the Registrar-General, which has been established for the past forty years in England, would seem to indicate that there was an alarming increase of cancer in the population of England and Wales. Attempts have been made to explain this on the hypothesis that in the past decade preventive medicine has made such rapid strides that there is a larger survival to adult age now than aforetime. Supposing this to be true, is the number of survivors to the cancer age so much greater as to explain the increase in the cancer death-rate? And if not, what proportion can be thus explained? Referring to the Registrar-General's statistics, it is found that out of every million living at all ages the number of males aged twenty-five and upward was 214,644 in 1881–1890 as compared with 214,566 in 1871–1880. These figures furnish no assistance to account for the great increase in the registered mortality of cancer. Dr. Arthur Newsholm asserts that the increase is not a real one, but only apparent, and is due to more accurate methods of diagnosis and to more careful certification of the causes of death, more especially the latter. The greater increase of cancer among males is cited as confirmatory of this view, since it is known that cancer in the male is more frequently internal, and therefore more difficult of diagnosis than in the female; but clinical methods employed in formulating different diagnoses have been so elaborated as to render it possible at the present time to recognize cancer more frequently than heretofore. So, too, the greater number of autopsies that are held to-day will account undoubtedly for no small proportion of the increased number of cancer registrations. This can be proven by turning to the statistics of hospitals, where autopsies have now become the rule rather than the exception. Whether this increase is apparent or real, the fact remains that cancer is among the most deadly diseases, causing about 6 per cent. of the total deaths registered among males and more than 7 per cent. of deaths registered among females, at ages over forty-five years.

The statistics collected by Dr. Tatham, showing the cancer mortality according to occupation, would seem to teach us that the latter plays no important rôle in the etiology of cancer. The only deduction that can be drawn is that among those occupations in which one finds a more or less intemperate class of men the mortality is higher. The figures for commercial travellers, coachmen, seamen, innkeepers, brewers, maltsters, and butchers certainly point in this direction.

Roswell Park, in his contribution to this series of articles, "A Further Inquiry into the Frequency and Nature of Cancer," speaks of the alarming increase of cancer throughout the United States and more especially in the State of New York. If for the next ten years the relative death-rates are maintained he prophesies that ten years from now we shall find that there will be more deaths in New York State from cancer than from cancer, smallpox, and typhoid fever combined. The danger of drawing false conclusions from statistics is here well illustrated, if we reflect upon the views set forth by Newsholm in the preceding paper. The latter inclines to the view that the increase in the cancer registration or mortality is only apparent, being the result of more accurate methods of diagnosis and a more perfect system of registration; and, granting the assumption of this very plausible explanation, we doubt very much whether Park's prophecy will be realized. Park represents himself as a staunch advocate of the parasitic origin of cancer, and sees nothing to prevent the closest analogies being drawn between cancer and other infectious granulomata, such as those of syphilis and tuberculosis. That the specific micro-organism has not been definitely isolated is no argument against the infectious nature of cancer, for who is there who does not regard syphilis as an infectious disease? And yet the specific organism remains to be revealed. The cachexia that is found in the pronounced stages of all the infections is but another analogy; so, too, the occurrence of cancer in certain families, its prevalence not only in certain localities, but under the same roof, and even in certain individual rooms. The characteristic reaction of the cells, the way in which they group themselves, their internal activities, their behavior in every respect, though not identical, are so plainly analogous that they cannot be disregarded. As a result of multitudinous observations histologists have noted in and among cancer cells certain appearances, that have been ascribed variously as protozoa, fungi, or cell degenerations, which provoke suspicion of the presence of micro-organisms. Before the specific organism is discovered it may be necessary to improve our technique, to devise new culture media more nearly resembling human tissue, or to supply some new staining fluid. Experimentation, especially the method of inoculation, will have to be continued under the most improved methods. Already some startling results in this line of work have been obtained, notably by Hanan, Monroe, Eiselsberg, and others, who have repeatedly succeeded in transmitting tumors from one animal to another by inoculation in implantation, and by Bosc, who alludes to three cases in which the inoculation of cancer from man to man was intentionally and successfully practised. Numerous instances could be cited of experiments, already carried out, the natural deductions of which draw the analogy of cancer to the other infectious granulomata closer. Practically all the characteristics of cancer, Park says, are explained by the well-known activity of parasites, which tend, for the most part, to an intracellular life, and which rarely penetrate the cells themselves except in search of pabulum or as the result of pressure. Finally, the contagious nature of cancer, in support of which many cases are cited, bespeaks its infectious nature. The work that is being carried on in the laboratory equipped and maintained by the State of New York, under the directorship of Park, gives promise of furnishing valuable additional information in this field of research. In virtually every fresh specimen of cancer it has been possible to demonstrate bodies which cannot be other than parasites, though whether they are fungi or sporozoa is still undetermined. Apart from the usual line of investigation, it is intended to conduct investigations, from the stand-point of physiological chemistry, of all the fluids and secretions of the body —a line of work which has been already inaugurated by Moraezewski in his estimation of the amount of chlorine and phosphorus in the blood of cancer patients.

Haviland, who has already contributed several valuable articles upon the geographical distribution of cancer, makes some more recent observations in a paper entitled "The Medical Geography of Cancer in England and Wales." In 1868 he read a paper on "The Geographical Distribution of Cancer among Females Throughout England and Wales, During the Decennial Period, 1851–1860," in which he summed up the following propositions: 1. That the districts having the highest death-rates from cancer among females were invariably associated with seasonally flooded areas traversed by or in close proximity to fully formed rivers. 2. That, geologically, these high mortality districts were characterized by alluvium and subsoils of clays of every variety, age, and formation. 3. That the districts having the lowest death-rates from cancer were situated on elevated land, where the drainage was good and the physical features of the country such as to preclude the possibility of floods; where rivers derived their sources, and where, in fact, they were not fully formed. 4. That, geologically, these two mortality districts were characterized by the oldest palæozoic rocks, especially those of the carboniferous limestone period—the liassic, oölitic, and cretaceous limestones. These observations have become enhanced in value by the fact that, though three decades have passed, Dr. Haviland has found that for the period 1881–1890 these observations still hold good. When the association between the limestones and a low mortality and between flooded clays and a high mortality is explained we may be able to throw some further light upon the etiology of cancer. To make the treatment of the subject more complete, an article from the pen of D'Arcy Power on the local distribution of cancer and cancer houses has been secured. Certain districts are described where cancer is unusually prevalent, and, not only so, but the histories are given of houses in which one or more of the families of three successive tenants developed the disease. In some instances these striking phenomena occurred in the case of a single house, in others in rows of houses under one roof. If space would have allowed it would have been interesting here to have given in detail some of the histories as they are recorded. The location of these highly infected districts was in every case in low, marshy ground, usually on the banks of a river or stream—conditions identical with those described by Haviland as prevailing in his districts of high mortality. Can any theory be formulated as to the etiology of cancer from the knowledge of its predilection for the low-lying, marshy districts? Power says it would be interesting to imagine that cancer was caused by an organism allied to and living under similar conditions to that of malaria, but differing from it in the fact that it had a much longer incubation period; that it attacked tissues in a more decadent condition; that it no longer confined itself to the blood, but that it was capable of penetrating the tissues, thereby causing a rapid proliferation of the cells — both epithelial and connective-tissue. The history of some of the cases in localities where the disease is so prevalent would lead one to suspect the water-supply or an infected house as the exciting cause; but the latter must be looked for much further afield, and it will almost certainly prove that there is some intermediate host, whose chance of detection will increase or diminish with the care which is taken to examine the fauna and flora of these particular districts.

The most interesting of this series of articles embodies the results of Plimmer's recent investigations of the etiology and histology of cancer. His time has been largely devoted to the study of the intracellular bodies, which he believes play some part in the etiology of cancer. In 1278 specimens of cancer he found these intracellular bodies in 1130 cases, and of those in which he failed to find them sixty-three were densely fibrous and atrophic, and twenty-seven were so degenerated that with careful examination no stain could be made to affect the broken-up and dead cells. These intracellular bodies are neither a part of the cell structure, nor, as has been claimed, the result of degenerative changes, since they show none of the reactions of any known degeneration; they are not found in parts of cancer undergoing degeneration, but only in the actively growing parts; they are not to be found in any other tissue, in any kind of degenerated or inflamed tissue, nor in any neoplastic tissue; they can and do multiply in cancer kept outside the body, and can be grown outside the body. They have been found so repeatedly that it has been possible to describe their morphology, their reactions to stains, their methods of division, and their location in the tissues with great accuracy. These parasites are not found in all parts of cancer, but only in the periphery, where the cells are active and not undergoing any degenerative changes; nor do they appear in equal numbers in all cases. A very decided relation between the number of parasites and the malignancy of the growth has been found, for in the rapidly growing cancers they appear to be most numerous, and *vice versa*. The exact nature of these parasites has been disputed, but Plimmer believes that in the light of our present knowledge they should be called protozoa. The Italian school, headed by Sanfelice, regard them as blastomycetes, but it is possible that these are only protozoa in their developmental stages.

However we may choose to classify these parasitic bodies, the fact remains that they are constantly present in all cases of cancer; that they are constantly absent in other diseased conditions of the cell; that by improved technique in fixing and staining the tissues it has become possible to study their life-history with great accuracy. The value of these histological studies has been enhanced by the results of experimentation in the isolation and cultivation of these bodies outside the human body and the inoculation of animals with these organisms. Plimmer has succeeded in isolating an organism from a malignant tumor in man which, when introduced into animals, has caused death, with the production of tumors, so far, of endothelial origin. (That these tumors have been of endothelial origin is due to the fact that it has been difficult to bring the tumor into contact with a likely epithelial surface in a suitable animal.) Pure cultures made from these tumors will, if inoculated into suitable animals, reproduce similar growths.

Since in recent years surgeons recognize the necessity of removing not only the growth itself, but the tissues through which the lymphatic vessels run, and the neighboring lymphatic glands, the percentage of cures on the three-year limit is daily growing larger. In cancer of the breast the recent series of sixty-one cases operated upon by Watson Cheyne yielded him a percentage of 50 per cent. cures as compared with the former percentage of 10 per cent. when the incomplete operation was performed. Cheyne removes the entire breast, with all its ramifications, all the pectoral fascia, and the pectoral origin of the pectoralis major, if necessary; all the tissue lying between the breast and axilla, and all the axillary contents with the exception of the vessels and nerves. In order to insure removal of all the breast lobules the skin is undermined as far as the clavicle above, the middle of the sternum internally, over the abdominal muscles below, and the latissimus dorsi to the outer side. Operative interference in cancer of the skin yields more permanent results than in any other form of cancer, providing one allows sufficiently free margin of healthy skin around the growth. The lymphatic vessels are rarely themselves involved, and the lymphatic glands remain free from infection for a considerable time. In epithelioma of the extremities where amputation was performed there were 51 per cent. of cures, and the recurrences, which were eventually glandular and not local, were 35 per cent. The number of cures following extirpation of epithelioma of the lower lip is over 40 per cent. Bearing in mind the mode of spread of cancer along the lymphatic area, better results should be obtained if more material were removed in that direction by prolonging the apex of the wedge downward. At the time of the primary operation, or as soon as there is the slightest evidence of glandular involvement, the submaxillary and submental regions should be exposed and dissected free of all lymphatic glands and overlying fat. Cancer of the tongue should be regarded as the worst form of cancer the surgeon has to deal with. By taking every precaution against sepsis the mortality cannot be reduced below 5 to 10 per cent., and recurrence is apt to be rapid. Cheyne makes it a practice to clear out the submaxillary and anterior triangles in all cases; if the glandular involvement is slight or absent at the time, the tongue is removed first, and the triangles approached a week later, but when there is marked glandular involvement and where the seat of the disease is not very extensive, he clears out the triangles first, and a week later removes the tongue. But little advance has been made in the technique in operations for cancer of the throat, and unless the disease be very limited there is but little hope of obtaining radical cure. The risks of the operation are very great, more especially from septic pneumonia. Cancer of the larynx is much more amenable to treatment, and since such advances have been made in laryngoscopy the disease is detected in its earliest stages, when it is limited to but one vocal cord and its vicinity, and before there has been any lymphatic involvement. If a complete laryngotomy is indicated much better results have been obtained of late by abandoning the idea of providing for the insertion of an artificial larynx. When this was done the dangers of septic pneumonia increased the risks of the operation. Surgery offers no hope of a radical cure for cancer of the œsophagus; the best it can do is only palliative, and may prolong the patient's life, which is threatened by starvation, for a short period.

Cancer of the body of the stomach has of late been treated by complete extirpation of the organ, but the cases in which this operation is justified must be extremely rare. Either the vitality of the patient will not admit of such a formidable operation or the extent of the disease makes it impracticable. When cancer is limited to the pylorus operative interference has yielded excellent results, but as in cancer elsewhere the operation, to be successful, either as regards life or freedom from recurrence, must be done early. When pylorectomy is contraindicated the patient can be relieved of a great deal of suffering by effecting an anastomosis between the stomach and jejunum. Malignant disease of the rectum is now most accessible to the knife, and in suitable cases the radical operation should be recommended, since we know that in no mean percentage of cases there is no recurrence, and, if the disease does recur, it does so with extreme slowness. The suitable cases may be said to be those which are in the early stage, those where the bowel is freely movable and not adherent to the surrounding organs or sacrum, and those where the cancer is within fairly easy reach of the finger.

Of all the methods that have been suggested in the treatment of inoperable cancer but one has had sufficient trial to warrant its recognition. The mixed toxins of erysipelas and bacillus prodigiosus have been employed by Coley himself in 148 cases and by other observers in thirty-five cases. Of the 148 cases the treatment may be regarded as primarily successful in twenty-four, or 15 per cent., and of the series of thirty-five cases twenty-six disappeared completely, two others decreased so much that only an insignificant node was left. These results are sufficient to warrant this form of treatment being pursued in the strictly inoperable cases. Unfortunately but little success has been obtained in its application to cancer proper, the best results being reported in cases of spindle-cell sarcoma. The toxins have been used for a short time after operation, with some promise of success, as a prophylactic measure. The treatment at least rests on a logical and scientific basis, and inasmuch as so many authentic cases have already been recorded in which there has been no recurrence in three years, it cannot be ignored by the profession.

and the success of treatment based upon this theory is looked upon as a strong argument in its favor. As an example of the sound common sense dominating the book we must refer to the caution against overtreatment of this protean malady, a masterly inactivity being the best policy when the disease is quiescent or in retrogression.

In the treatment of lupus vulgaris the old tuberculin is still regarded as having a distinct place, along with topical remedies. The new tuberculin has been tried and found disappointing, although the results at first were brilliant.

In the chapter on ringworm the results of the author's own observation and research are succinctly stated. He is of the opinion that there are but two varieties of the ringworm fungus of clinical importance, a small-spored fungus, the *microsporon audouni*, which attacks the scalp chiefly and is found almost exclusively in children, and a large-spored one, found upon the body, in the beard, and the nails. His observations also lead him to believe that many forms of tinea tonsurans are varieties of favus.

In concluding we take pleasure in recommending this treatise to those who desire a reliable guide in dermatological practice.

M. B. H.

THE AMERICAN TEXT-BOOK OF GYNECOLOGY, MEDICAL AND SURGICAL, FOR PRACTITIONERS AND STUDENTS. By HENRY T. BYFORD, M.D.; EDWIN B. CRAGIN, M.D.; WILLIAM GOODELL, M.D., FLORIAN KRUG, M.D.; WILLIAM R. PRYOR, M.D.; J. M. BALDY, M.D.; J. H. ETHRIDGE, M.D.; HOWARD A. KELLY, M.D.; E. E. MONTGOMERY, M.D.; GEORGE W TUTTLE, M.D. Philadelphia: W. B. Saunders, 1898.

THE rapid and progressive advances in the science and art of gynecology during the last few years have created an almost constant necessity for the revision of works on this subject. For this reason the writers of this book, all of whom are prominent teachers of this branch of surgery, offer to the profession a second and revised edition, adding such new material and modifying or eliminating the old as subsequent experience and practice would seem to justify. A large number—more than forty—of the old illustrations have been replaced by new, original, and borrowed illustrations, all of which add very materially to the elucidation of the text, and, very wisely, they picture methods, not specimens.

The descriptions of the preparations for each operation and the after-management of patients have been relegated to the chapters on technique and after-treatment; this has relieved the body of the book from continual repetition.

The chapters on laceration of the soft parts have been generally improved, particularly as to illustrations, which are taken from the *Text-book on Diseases of Women*, by Prof. Penrose. We would note that while a rather new secondary operation for complete tear of the perineum is described, Figures 143 and 144 illustrate the Emmet operation, which latter operation, though generally accepted as the best, is not mentioned. In the chapter on distortions and malpositions, the epithelium of the endometrium is referred to as melting off during menstruation, and in pathological anteflexion as coming away in blocks and threads. Recent histological investigations, we believe, have very definitely proven that no desquamative changes in the endometrium take place during this physiological process. This is also referred to in the chapter on menstruation and its anomalies.

We are surprised to see advised the extensive use of the uterine sound and uterine elevator in describing methods of examination of the female pelvic organs; for we believe these instruments, except during operation, have long since been dropped from the armamentarium of the modern gynecologist, and are considered to be very dangerous.

It would seem also that the pathology of the female genital tract in this book, both macroscopical and microscopical, needs more complete revision and elaboration.

The chapter on the bladder, urethra, and ureters have been re-written and brought thoroughly up to date. Hysterectomy also, both abdominal and vaginal, has been revised and modified and beautifully illustrated. With few exceptions, however, and considering that difference of opinion will always exist, this book is generally to be commended as one of the most complete and practical works on gynecology. It is a clearly written, up-to-date, and safe, practical guide in the treatment of the diseases of women, and well deserves the popularity it has already gained. H. D. B.

ATLAS AND EPITOME OF OPERATIVE SURGERY. By DR. OTTO ZUCKERKANDL, Privat-docent in the University of Vienna. Authorized translation from the German. Edited by J. CHALMERS DA COSTA, M.D., Clinical Professor of Surgery in Jefferson Medical College, Philadelphia; Surgeon to the Philadelphia Hospital, etc. With twenty-four colored plates and 217 illustrations in the text. Pp. 385. Philadelphia: W. B. Saunders, 1898.

THIS work is a translation of one of the series of Lehmann's *Medicinische Handatlanten,* which have of late become quite popular. It is designed as an elementary work for students in operative surgery, and is one of the best of its kind.

The various "typical" operations are succinctly and carefully described, due reference being made to the surgical anatomy of the parts. A judicious selection from the numerous operative procedures has been made, and the book is thoroughly up to date. The abundant illustrations are, taken as a whole, good, though a few inaccuracies have crept in, as, for instance, the position of the arteria profunda femoris in Plate IX; the high position of the innominate artery in Plate XIV; and the absence of several veins in Plate XI.

In the description of intestinal sutures the importance of including part of the submucosa in the Lembert stitch, so strongly insisted upon by Halsted, is not alluded to.

A few inaccuracies of nomenclature, as "deep perineal nerve," on page 82, and "choledoch duct," on page 320, may be noted. However, it were captious to allude to these minor defects in a work of such general excellence. C. A. H.